2011 PROJECT PROPOSAL

INVASIVE SPECIES MANAGEMENT WITH VOLUNTEERS

Name of Project: Palmyra Atoll NWR Invasive Plant Management: Eradicate/Control

Refuge/Wetland management District: Palmyra Atoll National Wildlife Refuge

Project Description: Remote atoll ecosystems are havens of biological diversity, but vulnerable to ecological invasion. The prosperity of the plants and animals that inhabit remote atoll ecosystems are dependent on an intact healthy ecosystem free of invasive species. On Palmyra, invasive plants are unraveling well established relationships between terrestrial organisms, by crowding out native species and completely altering the landscape and habitat. Several of these invasive species are nitrogen fixing and/or allelopathic, and can cause wholesale ecosystem shifts when they become dominant. This project will initiate a proactive, adaptive and integrated invasive species management approach to curtail and prevent the further influence of invasive plants and trees on private and refuge lands at Palmyra. This two year project will focus on: 1) Restoration of biological habitat integrity through chemical and mechanical control/eradication of focal invasive species; 2) Volunteer training in the detection, eradication, and control methods so that no lag time occurs by the response team following the detection of an invasion; 3) Early Detection Rapid Response efforts, as outlined in the Biosecurity Plan for Palmyra, to detect new invasive species and increase the likelihood that invasions are localized and within containment/eradication capabilities; and 4) Adaptive Management through post-treatment monitoring and sampling to measure the extent to which our actions contribute to positive change and assure the highest return on our investments.

Friends Groups, Volunteers, and Other Partners: The Palmyra Atoll NWR is fortunate to have established USFWS partnerships with The Nature Conservancy (TNC) and nine academic institutions that comprise the Palmyra Atoll Research Consortium (PARC). Volunteers from USFWS, TNC, and PARC will work on refuge lands to eradicate and control invasive species.

Public outreach and/or Environmental Education: Palmyra Atoll NWR offers an unparalleled ability to disseminate USFWS invasive species efforts and accomplishments. TNC and PARC are actively committed to using their vast public relations and media outlets to cooperatively assist USFWS in public outreach and education.

Post-treatment Monitoring: Active monitoring by volunteers of treated sites and potential invasion/reinvasion areas will be conducted within an Adaptive Management framework entailing: annual surveys, Paired Photo plots, Time series analysis, transects, GIS mapping and abiotic measurements.

Criteria for Proposal Success: Train: 6 volunteers on EDRR protocols: Eradicate: Ornamental/Agricultural plants; Haole Koa, Ironwood, Indian almond, Devil's ivy, Norway Pine, Coconut palm (from select islands) Control with hopes of future eradication: Taro vine; Control: coconut palm on select islands.

Budget:

Procedure/Action

Rapid Response Control and Eradication	**2011**
Materials (Mechanical and Chemical)	$3,000
Volunteer Program (Safety and Training)	$1,000
Housing at PANWR	$7,000
Plane flights to PANWR	$8,000
Control and Eradication	$1,000
Total	**$20,000**

Summary: In 2010 Palmyra Atoll National Wildlife Refuge was awarded $20,000 for invasive species removal with volunteers. The Palmyra program achieved the following results.

Project	Islands Treated	Plants Removed	Estimated Acres Controlled/Monitored
Coconut Palm	6	1,500	8
Ironwood	1	3	3
Haole Koa	1	50	1
Indian Almond	1	25	1

The 608 acres of Palmyra Atoll is continually monitored for invasive species. Haole Koa, Indian almond and Ironwood are found only on Cooper Island, Coconut palms are found throughout the atoll. The Haole Koa Project highlights the success we have had in removal and prevention of reintroductions, with only 50 plants found in a centralized area on Cooper Island. All Haole Koa were removed and we are in the process of removing the remaining Ironwood trees. Control of Indian almond has started around the camp area, 25 trees have been removed. A total of 1,500 Coconut palms were removed from 6 islands (8 acres), 4 islands are now free of Coconut palms. Continued monitoring and removal of invasive species in both early and late stages is critical in restoring the ecosystem at Palmyra Atoll.

Native plant propagation and out-planting occurred in areas freed of invasive species. Species out-planted include *Barrangtonia asiatica, Cordia subcordata, Hernandia numphaeifolia, Ipmoea violacea and Pisonia grandis.*